

CLAIMS

1. A diaphragm for use in an electro-acoustic converter, the diaphragm being made of an aromatic polyimide film being made from;

5 a carboxylic acid component containing dicarboxylic acid compound having at least two of ether-linked benzene rings as a major component, and

a diamine component containing diaminophenyl ether as a major component;

10 wherein a glass transition temperature of the aromatic polyimide film is at lowest 230°C and at highest 300°C.

2. The diaphragm for an electro-acoustic converter according to claim 1, wherein the dicarboxylic acid compound is oxydiphthalic acid
15 anhydride.

3. The diaphragm for an electro-acoustic converter according to claim 1, wherein an internal loss of the film is at least 0.02.

20 4. The diaphragm for an electro-acoustic converter according to claim 1, wherein thickness of the film is at least 10 μm and at most 500 μm .

5. A method of manufacturing a diaphragm for an electro-acoustic
25 converter comprising:

preparing an aromatic polyimide film whose glass transition temperature is at lowest 230°C and at highest 300°C from a carboxylic acid component containing dicarboxylic acid compound having at least two ether-linked benzene rings as a major component and a diamine component
30 containing diaminophenyl ether as a major component, and

drawing the film to form the diaphragm.

6. The method of manufacturing a diaphragm for an electro-acoustic converter according to claim 5, wherein the dicarboxylic acid compound is oxydiphthalic acid anhydride.

7. An electro-acoustic converter comprising
a magnetic circuit,
a frame coupled with the magnetic circuit,
10 a diaphragm made of an aromatic polyimide film being made from a carboxylic acid component containing dicarboxylic acid compound having at least two of ether-linked benzene rings as a major component, and a diamine component containing diaminophenyl ether as a major component, a glass transition temperature of the aromatic polyimide film being at
15 lowest 230°C and at highest 300°C, an outer circumferential edge of the diaphragm being fixed to an outer circumferential part of the frame, and
a voice coil coupled with the diaphragm and disposed within an operating region of magnetic flux generated from the magnetic circuit.

20 8. The electro-acoustic converter according to claim 7, further comprising a horn disposed on a side opposite to the voice coil with respect to the diaphragm.

9. An apparatus comprising:
25 a main unit, and
an electro-acoustic converter powered by the main unit, the electro-acoustic converter including:
a magnetic circuit,
a frame coupled with the magnetic circuit,
30 a diaphragm made of an aromatic polyimide film being made

from a carboxylic acid component containing dicarboxylic acid compound having at least two of ether-linked benzene rings as a major component, and a diamine component containing diaminophenyl ether as a major component, a glass transition temperature of the aromatic polyimide film
5 being at lowest 230°C and at highest 300°C, an outer circumferential edge of the diaphragm being fixed to an outer circumferential part of the frame, and

a voice coil coupled with the diaphragm and disposed within an operating region of magnetic flux generated from the magnetic circuit.

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10. The apparatus according to claim 9, wherein the main unit has at least a circuit for amplifying input signals to be delivered to the electro-acoustic converter.

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11. The apparatus according to claim 9, wherein the main unit includes a body, a driving gear provided in the body, driving wheels driven by the driving gear and support the body, a steering disposed in the body, and wheels for steering maneuvered by the steering,

and wherein the electro-acoustic converter is disposed in the body.